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MARABOUS ASSOCIATED WITH VULTURE PARTIES IN EAST AFRICA

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Vultures have been studied extensively in the Serengeti area (Kruuk 1967, Houston 1974a,b, 1975) but there are few published data on their numbers elsewhere, nor of the numbers of Marabous *Leptoptilos crumeniferus* attending them. Between 1970 and 1977 I observed and counted 21 vulture parties in various parts of East Africa (Table 1). All parties were at carcasses of large mammals, three being cattle and the remainder wild species, ranging from antelopes to elephants. By far the commonest vultures were the two griffons, *Gyps africanus* and *G. rueppellii* which together contributed more than 90 per cent. of the total. The two species were not always separated in the field but, where separate counts were made, the White-backed *G. africanus* was invariably more numerous. Rüppell's only made up a fifth of the *Gyps* vultures in Serengeti (Houston 1975); it is less common in Kenya (cf. Brown 1972, Table 6) and is rare in most parts of Uganda. Lappet-faced *Torgos tracheliotus* and Hooded Vultures *Necrosyrtes monachus* were also frequent at vulture parties, but White-headed *Trigonoceps occipitalis* and Egyptian Vultures *Neophron percnopterus* were uncommon in vulture parties. Twelve of the parties counted numbered 60 to 120 birds; Houston (1974b) showed that the numbers were related to the amount of food available.

TABLE 1

Mean numbers of vultures and Marabous at 21 vulture parties in East Africa. The standard errors of the means are given in brackets

Number of parties counted in:	*Kenya	*Uganda	*Tanzania	% of all parties at which species was present
Species	4	13	4	
Marabou	6.7(2.0)	7.4(3.3)	2.5(0.6)	76
Griffon vultures	71(14)	60(7)	84(24)	100
Lappet-faced Vulture	2.4(1.6)	0.5(0.3)	3.5(1.5)	43
White-headed Vulture	0	0.6(0.3)	0.2(0.2)	19
Egyptian Vulture	0.5(0.3)	0	0	10
Hooded Vulture	1.7(1.2)	4.1(1.4)	3.0(2.7)	62
Total vultures	76(12)	65(18)	90(27)	100

*The Kenyan observations were made at Nairobi National Park, Samburu, Emali and Simba. The Uganda parties were in Kidepo Valley National Park, Kabalega Falls National Park and in Kigezi District (one each), and the remainder in Rwenzori National Park. The Tanzanian observations were all in Serengeti National Park. (The data used to compile Fig. 1 apply to an unusual situation and are excluded from Tables 1 and 2.)

Brown (1972, Tables 6 and 8) counted birds of prey whilst driving some 4200 km along roads in drier areas of Kenya together with parts of Uganda which included Rwenzori and Kabalega Falls National Parks. A comparison of the numbers of birds seen by Brown on his transects and the numbers reported here at carcasses shows that the proportions of the various species were very different (Table 2; $P < 0.001$). Although the two *Gyps*

TABLE 2

Numbers of vultures observed in two East African studies

Species	Brown (1972, Tables 6&8)	This study	
		Observed	Expected*
Griffon spp.	263	1389	1145
Lappet-faced	16	31	69
White-headed	9	9	39
Egyptian	6	2	26
Hooded	51	70	222
Total	345	1501	1501

*On a hypothesis of similar proportions to those observed by Brown.

species accounted for over three quarters of the birds seen by Brown they were, however, less dominant in the countryside generally than at carcasses. Of the remaining species, the greater abundance of Hooded and Egyptian Vultures in Brown's counts probably reflects their association with human settlements (Houston 1975, Pomeroy 1973).

In Serengeti, 77 per cent. of the vultures counted by Kruuk (1967) were griffons, and Houston (1974b) states that 88 per cent. of his vulture records were of griffons. Even the latter percentage is lower than that shown in Table 1 ($P < 0.01$). The preponderance of griffon vultures seems to be universal in the grasslands of East Africa.

Marabous were found at eight of the thirteen carcasses in Uganda and at all eight in Kenya and Tanzania. On average, vultures outnumbered Marabous by about 12:1. At vulture parties Marabous obtain almost all their food by theft from the vultures or by picking up scraps which would eventually be eaten by vultures. In this situation they can therefore be described as 'food parasites' because without the vultures they would obtain nothing, their beaks being totally unsuitable for obtaining food direct from a carcass.

Besides Marabous, several other species frequent vulture parties, the most characteristic being Tawny Eagles *Aquila rapax* and Black Kites *Milvus migrans*. Their numbers are usually small, however, and in terms of biomass their contribution to the disposal of large mammal carcasses is negligible.

The effects of a very large supply of food were observed in September 1971 when thirteen drowned wildebeest *Connochaetes taurinus* were dragged from the Seronera River in Serengeti National Park for analysis of their stomach contents. The work began at 09.00 hrs and by the time the work on the carcasses was finished at 11.00 hrs, there were nearly 100 vultures in the surrounding trees. Numbers increased rapidly to a peak of almost 400 in just under an hour (see Fig. 1).

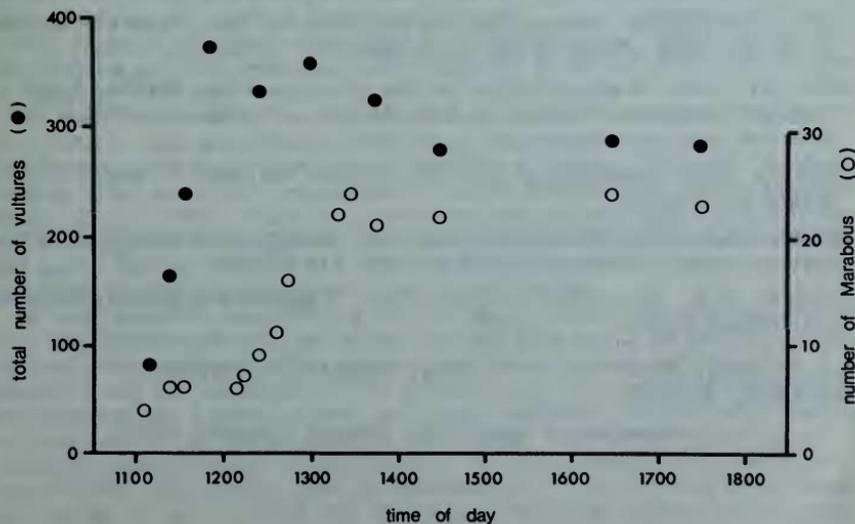


Fig. 1 Numbers of Marabous (○) and vultures (●) at a large food source

Later, some birds left, but arrivals continued until after 13.00 hrs. The carcasses were reduced to bones by 13.30 hrs. After that, most birds were resting although some continued pecking until about 17.30 hrs.

The majority of the Marabous arrived an hour or so later than the vultures, their numbers reaching a peak of 24 some 1½ h later than the vulture peak (see Fig. 1). The greatest numbers of the different species at any one time were: 80 Rüppell's Griffon Vultures (at 11.50 hrs), 270 White-backed (at 11.50 hrs), 21 Lappet-faced (at 13.45 hrs), 18 Hooded (at 11.10 hrs), two White-headed and one Egyptian at 12.00 and 13.35 hrs respectively.

Schaller (1972) gives the average weight of a wildebeest as 108 kg, and of this about 55 per cent. is edible by vultures (Houston pers. comm.). Marabous can consume 1.35 kg in a day (Kahl 1966), and griffon vultures a similar amount (Houston 1976). The total number of vultures feeding on the carcasses is likely, therefore, to have been at least 500, although not all of them were there at one time.

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